

Wisconsin Department of Safety and Professional Services

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RADIOGRAPHY EXAMINING BOARD

LIMITED X-RAY MACHINE OPERATOR (LXMO) PROGRAM CURRICULUM

APPLICANT: Complete this section and submit to certifying school for completion. Form must be returned directly from the school to the Department at the above address.

Last	First Name	MI	Former / Maiden Name(s)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Address: (number, street, city, zip code)

Mailing Address: (if different)

Daytime Telephone Number

-

Date of Birth

/ /

Social Security #

- -

(voluntary-for school's use in locating your records)

CERTIFYING SCHOOL: Please complete the following and return directly to DSPS: You may fax/email with facility cover sheet/letter to: (608) 261-7083 or dspscredradiography@wisconsin.gov.

Enter the number of classroom hours of study the applicant has completed in the eight (8) areas that are listed below. The total must be between the range of 384 - 432 hours or more.*

COURSE CONFIGURATION: (hours and credits)

<u>Required Hours</u>	<u>Course Title</u>	<u>Minimum Required Credits</u>
48	Introduction to Radiography (48 required)	3
48	Radiographic Imaging 1 (48 required)	3
48	Radiographic Imaging 2 (48 required)	3
32-80	Radiographic Procedures 1 (32-80 required)	2-5
48	Imaging Equipment Operation (48 required)	3
48	Radiation Protection and Biology (48 required)	3
16	Radiographic Pathology (16 required)	1
96-340	Radiography Clinical (96-340 required)	3-6
384-432	Total Program Hours*	Total Credits 21-27

AFFIDAVIT: I attest to the fact that the above named applicant completed 384-432 hours of classroom study in a training program in limited x-ray machine operator (LXMO) listed above at:

Name of School:

Address of School:

This school was accredited by:

Was this school JRCERT approved at the time the applicant completed the required 384-432 hours of classroom study? ☐ Yes ☐ No

Number of Hours Completed:

Date Completed:

/ /

/ /

Signature of Dean or Department Head

Date

*Pages 2 - 5 only apply to schools NOT JRCERT approved. For all programs offering LXMO training not accredited by the Joint Review Committee in Education in Radiologic Technology (JRCERT) the State of Wisconsin Radiography Examining Board has established the following curriculum. The full Radiography Examining Board will examine and approve all LXMO programs that are not offered via a JRCERT program, to assure a high quality education and determine equivalent standards.

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Description:

LXMO curriculum prepares individuals for a career in diagnostic imaging. The LXMO produces images of limited area of the human body to aid physicians in the diagnosis of injuries and diseases. Applicants for a LXMO permit meeting all of the curricular requirements would be eligible to take the State of Wisconsin certification examination administered by the American Registry of Radiography Technologists (ARRT). Upon successful completion, individuals may obtain employment in x-ray departments associated with medical clinics, veterinary clinics, and private offices.

The LXMO curriculum focuses on theoretical and applied radiography and includes a clinical experience in an imaging department. Applicants should have learned to use x-ray imaging machines to demonstrate body parts on x-ray films for diagnostic purposes and minimizing.

External Requirements

Curriculum Outcomes

A. Carryout the production and evaluation of radiographic images

Direct Measures: Clinical Evaluation

Criteria:

1. Position patient for specified examination
2. Select appropriate image production exposure factors and make exposure
3. Evaluate final images for acceptable exposure quality, anatomical presentation, and
4. patient identifying information

B. Apply computer skills in the radiographic clinical setting

Direct Measures: Clinical Evaluation

Criteria:

1. Orient and annotate image
2. Prepare and send images to archive or PACS

C. Practice radiation safety principles

Direct Measures: Clinical Evaluation

Criteria:

1. Use proper collimation
2. Shield patient and others
3. Wear personal dosimeter
4. Practice cardinal principles of radiation protections: time, distance, and shielding

D. Provide quality patient care

Direct Measures: Clinical Evaluation

Criteria:

1. Identify correct patient and procedure to perform
2. Assess patient condition and respond accordingly
3. Obtain and document accurate patient history
4. Explain exam and give clear instructions
5. Communicate/interact with patients as appropriate

E. Model professional and ethical behavior consistent with the State of Wisconsin LXMO Code of Ethics

Direct Measures: Clinical Evaluation

Criteria

1. Maintain confidentiality
2. Interact professionally with healthcare professionals, patients and family
3. Respect diversity

F. Apply critical thinking and problem solving skills in the practice of diagnostic radiography

Direct Measures: Clinical Evaluation

Criteria:

1. Adapt procedures to patient condition
2. Adapt exposure techniques to patient's physical and pathological conditions
3. Evaluate image for diagnostic quality and implement corrective action if necessary
4. Use logic and judgement in performing procedure efficiently

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<u>384-432</u>	Total Program Hours*	Total Credits <u>21-27</u>

Program Course Detail:

Introduction to Radiography

Credits	3
Course Description	Introduces students to the role of radiography in health care. Students apply medical terminology, legal and ethical considerations to patient care and pharmacology in the radiologic sciences.
Program Outcomes	Practice radiation safety principles Provide quality patient care Model professional and ethical behavior consistent with the A.R.R.T. Code of Ethics Apply critical thinking and problem solving skills in the practice of diagnostic radiography

Radiographic Imaging

Credits	3
Course Description	Introduces radiography students to the process and components of analog imaging. Students determine the factors that affect image quality including contrast, density, detail, and distortion.
Program Outcomes	Carryout the production and evaluation of radiographic images Model professional and ethical behavior consistent with the A.R.R.T. Code of Ethics Apply critical thinking and problem solving skills in the practice of diagnostic radiography

Radiographic Imaging

Credits	3
Course Description	Explores film processing components as well as the principles and operation of digital imaging systems found in diagnostic radiology. Factors that impact image acquisition, display, archiving, and retrieval are discussed. Guidelines for selecting exposure factors and evaluating images within analog and digital systems. Principles of digital system quality assurance and maintenance are presented.
Program Outcomes	Carryout the production and evaluation of radiographic images Model professional and ethical behavior consistent with the A.R.R.T. Code of Ethics Apply critical thinking and problem solving skills in the practice of diagnostic radiography

Radiographic Procedures 1

Credits	2-5
Course Description	Prepares radiography students to perform routine radiologic procedures on various parts of the body including the upper body, hip, pelvis, and ankle. Students apply knowledge of human anatomy to position the patient correctly to achieve the desired result.
Program Outcomes	Carryout the production and evaluation of radiographic images Practice radiation safety principles

Radiation Protection and Biology

Credits	3
Course Description	Prepares radiography students to protect themselves and others from exposure to radioactivity. Students examine the characteristics of radiation and how radiation affects cell biology. Students apply standards and guidelines for radiation exposure.
Program Outcomes	Practice radiation safety principles Provide quality patient care

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Radiographic Pathology

Credits	1
Course Description	Prepares radiography students to determine the basic radiographic manifestations of pathological conditions. Students classify trauma related to site, complications, and prognosis and locate the radiographic appearance of pathologies.
Program Outcomes	Carryout the production and evaluation of radiographic images Apply critical thinking and problem solving skills in the practice of diagnostic radiography Model professional and ethical behavior consistent with the A.R.R.T. Code of Ethics

Radiography Clinical

Credits	3-6
Category	Technical Studies
Course Description	This beginning level clinical course prepares radiography students to perform radiologic procedures on patients with extensive supervision and direction. Students apply radiation protection and standard precautions in the production of radiographs in a health care setting while adhering to legal and ethical guidelines. An emphasis of the course is the development of communication and critical thinking skills appropriate to the clinical setting.
Program Outcomes	Carryout the production and evaluation of radiographic images Practice radiation safety principles Provide quality patient care Apply computer skills in the radiographic clinical setting Model professional and ethical behavior consistent with the A.R.R.T. Code of Ethics Apply critical thinking and problem solving skills in the practice of diagnostic radiography

Standards:

B. Clinical Practice:	F. Human Structure and Function:
B.I. Clinical Practice	F.I. Anatomical Nomenclature
B.II. Procedural Performance	F.II. Chemical Composition
B.III. Clinical Competency	F.III. Cell Structure and Genetic Control
	F.IV. Metabolism
C. Digital Image Acquisition and Display:	F.V. Tissues
C.I. Basic Principles of Digital Radiography	F.VI. Skeletal System
C.II. Image Acquisition	F.VII. Muscular System
C.III. Image Acquisition Errors	F.VIII. Cardiovascular System
C.IV. Software (Default) Image Processing	F.IX. Respiratory System
C.V. Fundamental Principles of Exposure	F.X. Reproductive System
C.VI. Image Evaluation	
C.VII. Quality Assurance and Maintenance Issues	G. Image Analysis:
C.VIII. Display	G.I. Imaging Standards
	G.II. Image Appearance Characteristics
D. Ethics and Law in the Radiologic Sciences:	G.III. Procedural Factors
D.I. Ethics and Ethical Behavior	G.IV. Corrective Action
D.II. Ethical Issues in Health Care	
D.III. Legal Issues	H. Imaging Equipment:
D.IV. Patient Consent	H.I. X-ray Circuit
	H.II. Radiographic Equipment
E. Fundamentals of Radiologic Science and Health Care:	H.III. Diagnostic X-Ray Tubes
E.I. The Health Science Professions	H.VI. Quality Management
E.II. The Health Care Environment	
E.III. Regulatory Agencies	I. Medical Terminology:
E.IV. Radiology Organization	I.I. The Word-Building Process
E.V. Professional Credentialing	I.II. Medical Abbreviations and Symbols
E.VI. Professional Organizations	I.III. Radiologic Technology Procedures and Terminology
E.VII. Professional Development and Advancement	I.IV. Understanding Orders, Requests and Diagnostic Reports

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Standards:

J. Patient Care in Radiologic Sciences:	O. Radiographic Pathology:
J.I. Radiographer and Health Care Team	O.I. Definitions/Terminology
J.II. Attitudes and Communication in Patient Care	O.II. Classifications (Definition, Examples, Sites, Complications, Prognosis)
J.III. Patient/Radiographer Interactions	O.III. Causes of Disease (Process, Examples)
J.IV. Safety and Transfer Positioning	O.IV. Radiologic Pathology (Definitions, Etiology, Examples, Sites, Complications, Prognosis, Radiographic Appearance, Procedural and Technique Considerations, Appropriate Imaging Modality)
J.V. Evaluating Physical Needs	
J.VI. Infection Control	
J.VII. Medical Emergencies	P. Radiographic Procedures:
J.VIII. Unique Situations and Trauma	P.I. Standard Terminology for Positioning and Projection
J.X. Tubes, Catheters, Lines and Collection Devices	P.II. General Considerations
	P.III. Patient Considerations
L. Radiation Biology:	P.IV. Positioning Considerations for Routine Radiographic Procedures
L.I. Introduction	P.V. Procedural Considerations for Contrast Studies
L.I.a. Molecular bonds	
L.I.b. Review of cell biology	R. Film-Screen Image Acquisition and Processing:
L.I.c. Types of ionizing radiation	R.I. Image Appearance Standards
L.I.d. Sources of medical radiation exposure	R.II. Optical Density
L.II. Biophysical Events	R.III. Contrast
L.III. Radiation Effects	R.IV. Recorded Detail/Spatial Resolution
L.IV. Radio sensitivity and Response	R.V. Distortion
	R.VI. Exposure Latitude
M. Radiation Production and Characteristics:	R.VII. Beam-limiting Devices
M.I. Structure of the Atom	R.VIII. Beam Filtration
M.II. Nature of Radiation	R.IX. Scattered and Secondary Radiation
M.III. X-Ray Production	R.X. Control of Remnant Beam/Exit Beam
M.IV. Interaction of Photons with Matter	R.XI. Exposure Factor Formulation
	R.XII. Exposure Factors
N. Radiation Protection:	R.XIII. Darkroom/Storage Environment
N.I. Introduction	R.XIV. Characteristics of Image Receptors
	R.XV. Image Receptor Holders and Intensifying Screens
	R.XVI. Automatic Processing
	R.XVII. Artifacts
	R.XVIII. Silver Recovery